

Message Text

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C O N F I D E N T I A L STATE 219796

E.O. 11652:ADS-DECLASSIFY UPON COMPLETION OF NEGOTIATIONS

TAGS: NL, NATO, ASEC, US

SUBJECT: NATO TRANSMISSION AND SCATTERING STUDIES

1. USAF HAS AN URGENT NEED FOR DATA REGARDING THE SCATTER-
ING PROPERTIES OF HAZE PARTICLES AT INFRARED (IR) WAVELENGTHS,
ESPECIALLY FOR IR SYSTEMS. SUCH DATA IS ESPECIALLY NEEDED
IN THE EUROPEAN ENVIRONMENT FOR THE ASSESSMENT OF VARIOUS
ELECTRO-OPTICAL SYSTEMS. THE AIR FORCE GEOPHYSICS
LABORATORY (AFGL) HAS BEEN CONDUCTING SUCH SCATTERING
MEASUREMENTS FOR THE PAST YEAR AT THE NATO PROJECT OPAQUE
STATION NEAR MEPPEN, FEDERAL REPUBLIC OF GERMANY, IN A RURAL
ENVIRONMENT. SIMILAR MEASUREMENTS ARE NEEDED FROM OTHER
EUROPEAN AREAS, AND THE NATO PROJECT OPAQUE SITE AT YPENBURG
IS IDEALLY SUITED FOR COLLECTING SUCH MEASUREMENTS IN AN
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URBAN-INDUSTRIAL ENVIRONMENT. REQUEST EMBASSY SEEK GON
APPROVAL FOR THE PROJECT DESCRIBED BELOW.

2. THE SYSTEM WOULD CONSIST OF TWO LASERS, A CARBON DIOXIDE
LASER OPERATING AT THE 10.6 MICRO METER WAVELENGTH, AND
YTTIRIUM ALUMINUM GARNET (YAG) LASER OPERATING AT 1.06
MICRO METERS. SCATTERED RADIATION FROM EACH OF THE LASER

BEAMS WOULD BE DIRECTED BY AN OPTICAL SYSTEM TO A DETECTOR WHICH WOULD SCAN ALL ASPECT ANGLES AS WELL AS EXTREME FORWARD AND BACK SCATTER (LESS THAN 3 DEGREES). THE SIGNAL LEVELS

SO MEASURED WOULD, WHEN REDUCED, INDICATE THE SO-CALLED PHASE FUNCTION FOR THE ATMOSPHERE IN THE SPACE DEFINED BY THE INTERSECTION OF THE LASER BEAMS AND THE DETECTOR OPTICS FIELD OF VIEW. THIS PHASE FUNCTION WOULD BE CHARACTERISTIC OF THE AEROSOLS PRESENT IN THE ATMOSPHERE. THE TWO LASERS OPERATING TOGETHER WOULD ALLOW A DIRECT COMPARISON OF THE SCATTERING IN THE TWO COMMONLY USED SPECTRAL REGIONS. DATA OBTAINED FROM THE INSTRUMENTS WOULD BE RECORDED DIGITALLY ON MAGNETIC TAPE AND RETURNED TO THE AIR FORCE GEOPHYSICS LABORATORY FOR REDUCTION AND STUDY.

3. THE INSTRUMENTS WOULD BE OPERATED ON THE GROUND, AT THE NATO PROJECT OPAQUE SITE AT YPENBURG, AND WOULD SUPPLEMENT THE OPTICAL DATA PREVIOUSLY OBTAINED UNDER NATO PROJECT OPAQUE. THE LASER BEAMS WOULD BE DIRECTED IN A PATH PARALLEL TO THE GROUND AT A HEIGHT OF 8 METERS OVER A MAXIMUM DISTANCE OF 20 METERS, AND WOULD NOT POSE ANY SAFETY HAZARD. INSTALLATION AND OPERATION OF THE INSTRUMENTS WOULD NOT REQUIRE ANY NEW CONSTRUCTION POWER SOURCES OTHER THAN WHAT IS CURRENTLY AVAILABLE AT YPENBURG. AFGL PERSONNEL, IN COOPERATION WITH

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PERSONNEL FROM THE PHYSICS LABORATORY OF THE NATIONAL DEFENSE RESEARCH ORGANIZATION OF THE NETHERLANDS WOULD INSTALL AND OPERATE THE EQUIPMENT. PRIOR INFORMAL DISCUSSIONS WITH PHYSICAL LABORATORY PERSONNEL INDICATE THAT SUCH A COOPERATIVE PROGRAM IS FEASIBLE.

4. IT IS PROPOSED THAT TESTING BEGIN IN EARLY JANUARY 1979 AND CONTINUE THROUGH 31 DECEMBER 1979. THE DATA OBTAINED FROM THIS TESTING WOULD BE UNCLASSIFIED AND WHOLLY RELEASABLE TO THE HOST GOVERNMENT. RELEASE OF THE DATA TO OTHER NATO COUNTRIES WOULD BE BY MUTUAL AGREEMENT.

CHRISTOPHER

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